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Declarations under Rule 4.17:

— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))

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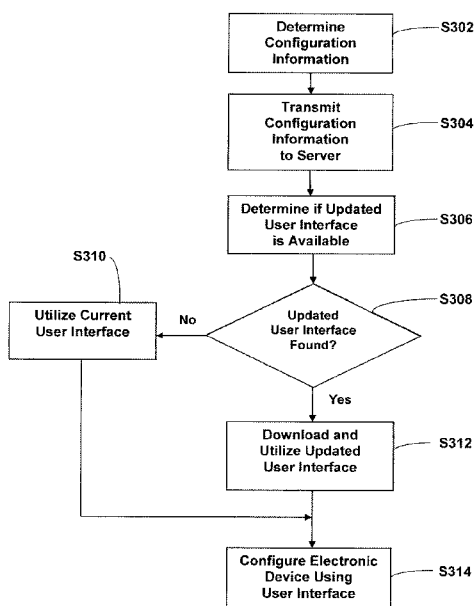
(54) **Title:** METHOD AND APPARATUS FOR CONFIGURING AN ELECTRONIC DEVICE

FIG. 3

(57) **Abstract:** An electronic device including a peripheral device connection unit configured to connect to a display interface of a peripheral device and to receive identification data for the peripheral device, and a controller. The controller is configured to determine configuration information, wherein the configuration information is based at least on one of the identification data for the peripheral device or geographic location data for the electronic device, obtain a user interface selected from a plurality of user interfaces based at least partly on the configuration information, and automatically configure the electronic device based on the obtained user interface.



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- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*
- Published:**
- *with international search report (Art. 21(3))*

METHOD AND APPARATUS FOR CONFIGURING AN ELECTRONIC DEVICE

BACKGROUND

[0001] Conventionally, a television was configured to connect to a set top box or an antenna. In such a case, the television was able to receive a cable feed or over the air content. However, the television may be unable to receive other content. To allow the television to receive the other content, the television manufacturer may have to produce a set top box to be connected to the television. However, the cost of manufacturing, distributing, and maintaining a set top box may be cost prohibitive. For example, the set top box may not contain all of the features that the manufacturer wants for a particular television, especially since each manufacturer may have numerous models of televisions.

BRIEF DESCRIPTION OF THE DRAWINGS

[0002] The features and advantages of the present embodiments will become more apparent from the detailed description set forth below when taken in conjunction with the drawings, wherein:

[0003] FIG. 1 depicts an electronic device configured to be connected to a server and/or one or more peripheral devices according to an embodiment;

[0004] FIG. 2 is a box diagram of an electronic device according to an embodiment;

[0005] FIG. 3 depicts a process for configuring an electronic device according to an embodiment;

[0006] FIG. 4 depicts a process for configuring an electronic device according to an embodiment; and

[0007] FIG. 5 depicts a process for configuring an electronic device according to an embodiment.

DETAILED DESCRIPTION

[0008] In an embodiment, an electronic device 102 is configured to be connected to one or more peripheral devices 104, a network 108, and a server 106 through the network 108, as shown in an embodiment in FIG. 1.

[0009] In an embodiment, the network 108 comprises one or more of a local area network, a wide area network, the Internet, a cable feed, a home network, or other types of interconnectivity which allows the electronic device 102 to access content or one or more peripheral devices 104. In an embodiment, one or more of the peripheral devices 104 may be connected to the network. For example, in the embodiment shown in FIG. 1, the peripheral devices 104 comprise a peripheral device 104a and a peripheral device 104b. In an embodiment, the peripheral device 104a comprises a television, while the peripheral device 104b comprises a set top box, a data storage device, or other devices which may utilize the electronic device 102 to display a user interface and/or content.

[0010] In an embodiment, the electronic device 102 comprises a set top box, a media player appliance, a network attached storage device, or other device which can load applications or play content. In an embodiment, the content comprises videos, photos, music, or any combination thereof.

[0011] In the embodiment shown in FIG. 2, the electronic device 102 comprises a controller 110, a memory 112, a peripheral device connection unit 114, and a network connection unit 116. In an embodiment, the electronic device 102 can optionally include a tuner to decode video or audio from a multimedia file. In an embodiment, the memory 112 comprises a hard disk drive, a solid state device, or any combination thereof. In an embodiment, the hard disk drive comprises a magnetic rotating disk. In an embodiment, the solid state device comprises a solid state memory.

[0012] While the description herein refers to solid state memory generally, it is understood that solid state memory may comprise one or more of various types of solid state non-volatile memory devices such as flash integrated circuits, Chalcogenide RAM (C-RAM), Phase Change Memory (PC-RAM or PRAM), Programmable Metallization Cell RAM (PMC-RAM or PMCM), Ovonic Unified Memory (OUM), Resistance RAM (RRAM), NAND memory (e.g., single-level cell (SLC) memory, multi-level cell (MLC) memory, or any combination thereof), NOR memory, EEPROM, Ferroelectric Memory (FeRAM), Magnetoresistive RAM (MRAM), other discrete NVM (non-volatile memory) chips, or any combination thereof.

[0013] In an embodiment, the network connection unit 116 is configured to connect the electronic device 102 to the network 108 and subsequently to the server 106 through the network 108. In an embodiment, the peripheral device connection unit 114 is configured to communicate with one or more peripheral devices 104. In an embodiment, the controller 110

can utilize the peripheral device 114 connection unit to scan, for example, using any of various device discovery protocols, and receive configuration information from the one or more peripheral devices 104.

[0014] In an embodiment, the configuration information comprises identification data of the one or more peripheral devices 104. In an embodiment, the identification data comprises information which identifies the peripheral device 104 such as manufacturer name, model information, and other information which may identify the peripheral device 104. In an embodiment, the identification data comprises extended display identification data (“EDID”).

[0015] In an embodiment, the peripheral device connection unit 114 is configured to communicate to the peripheral device 104 using high-definition multimedia interface (“HDMI”), RVU, Universal Plug and Play (“UPnP”), or other types of communication protocols or interfaces. In an embodiment, RVU comprises an RVU protocol which is approved by the RVU Alliance. In an embodiment, the network connection unit 116 can also be configured to connect to the peripheral device 104 to receive the configuration information. In an embodiment, the network connection unit 116 is configured to communicate with the peripheral device 104 using Bluetooth, near field communication, digital living network alliance (“DLNA”), or other types of communication protocols or interfaces.

[0016] In an embodiment, the peripheral device connection unit 114 comprises a display output, serial interfaces, connection units, or other types of communications devices. In an embodiment, the network connection unit 116 comprises a network card, wireless transceivers, connection units, or other types of communications devices. In an embodiment, the display output is configured to provide a connection over high-definition multimedia interface (“HDMI”). In an embodiment the network card comprises an Ethernet card, a Bluetooth transceiver, or any combination thereof. In an embodiment the wireless transceivers can be configured to connect over WiFi.

[0017] In an embodiment, the controller 110 can also utilize the network connection unit 116 to determine additional configuration information, such as geographic location data for the electronic device 102. In an embodiment, the geographic location data can indicate where the electronic device 102 is located. For example, the geographic location data can indicate a country, state, city, zip code, or any combination thereof of where the electronic device 102 is located. In an embodiment, the geographic location data is determined using an Internet

Protocol (“IP”) address, such as a public IP address associated with the electronic device 102. In an embodiment, the public IP address associated with the electronic device 102 can comprise, for example, an IP address associated with a router that the electronic device 102 is connected to in order to gain access to the network 108.

[0018] In an embodiment the controller 110 is configured to store the configuration information in the memory 112. The controller 110 can also utilize the network connection unit 116 to transmit the configuration information to the server 106. In an embodiment, the server 106 can transmit, and the controller 110 can receive a user interface from the server 106 based on the configuration information transmitted to the server 106. In an embodiment, the server 106 may store a plurality of user interfaces. Thus, the controller 110 can obtain the user interface selected from a plurality of user interfaces based at least partially on the configuration information.

[0019] In an embodiment, the controller 110 can configure the electronic device 102 based on the received user interface. In an embodiment, the controller 110 automatically configures the electronic device 102 based on the received user interface. In an embodiment, the user interface comprises applications available, application information, order of applications to be displayed on the user interface, data to be collected, advertisements displayed on the user interface, content recommendations, connection settings, network locations of operator services, or any other types of configurations which may be customized. In an embodiment, the user interface may also be accompanied by other configuration data such as configurations for the user interface, device settings, and/or remote control settings.

[0020] In an embodiment, the controller 110 can periodically transmit the configuration information to the server 106 to determine if an updated user interface is available and whether the current user interface should be updated. In an embodiment, the controller 110 can periodically update the user interface when an updated user interface is available.

[0021] In an embodiment, at least some of the user interfaces may be stored in the memory 112. Thus, instead of transmitting the configuration information to the server 106, the controller 110 can retrieve the user interface corresponding to the configuration information from the memory 112. In an embodiment, the controller 110 automatically configures the electronic device 102 based on the user interface retrieved from the memory 112. In an embodiment, the controller 110 can subsequently transmit the configuration information to the server 106 to determine if there is an updated user interface.

[0022] Thus, the electronic device 102 may be used in association with different companies looking to utilize the electronic device for its customers without having to manufacture the electronic device 102. For example, a first company which manufactures a television may wish to configure the electronic device 102 in a first manner, while a second company which supplies cable television programming may wish to configure the electronic device 102 in a second manner different than the first manner.

[0023] In an embodiment, the electronic device 102 can provide a first user interface to configure the electronic device 102 in the first manner, and a second user interface to configure the electronic device 102 in the second manner. Thus, the first company and the second company can both utilize the same electronic device 102. In an embodiment, this reduces a cost of the first company and/or the second company since they will not have to manufacture the electronic device 102, keep track of inventory of the electronic device 102, utilize unique stock keeping unit (“SKU”) for the electronic device 102, or otherwise handle complex logistics for the electronic device 102. Instead, the first company and/or the second company can just design the user interface which will be utilized by the electronic device 102 to customize the electronic device 102 as desired by the first company and/or the second company.

[0024] Furthermore, the first company and/or second company may have reduced costs with respect to ensuring compatibility of the electronic device 102 with other peripheral devices 104, maintenance of the electronic device 102, or other ancillary costs associated with supporting the electronic device 102.

[0025] In an embodiment, the electronic device 102 may also be portable, allowing for a client of a company to take the electronic device 102 with them when the client moves, which can reduce installation costs. In an embodiment, the electronic device 102 may also provide additional features which complement the peripheral device 104. In an embodiment, if the company manufactures the peripheral device 104, the company can set the user interface to complement features offered in the peripheral device 104. For example, a cable company may produce a peripheral device 104 which comprises a set top box. In such a case, the electronic device 102 may include features that complement the set top box, such as applications which the set top box may not have. The electronic device 102 may be configured to complement a variety of peripheral devices 104, such as set top boxes, televisions, Blu-ray players, home theater systems, and/or the like.

[0026] Furthermore, in an embodiment, the electronic device 102 may allow for targeted information to be presented to the user based on a geographic location of the electronic device 102. For example, the user interface can be customized based on the geographic location data of the electronic device 102. In an embodiment, this can allow for targeted advertising. Furthermore, this can also allow for selective rollouts of certain features in the user interface. This can be especially useful to gauge consumer reaction to certain features.

[0027] In an embodiment, a process for configuring the electronic device 102 is shown in an embodiment in FIG. 3. In block S302 the controller 110 determines configuration information of a connected peripheral device 104. For example, the controller 110 can determine identification data for the peripheral device 104 and geographic location data of the electronic device 102, which will be described in more detail below. Furthermore, in an embodiment, the controller 110 can ask the user to provide confirmation of the configuration information, which will be described in more detail below.

[0028] In block S304, the controller 110 is configured to transmit the configuration information to the server 106. In an embodiment, when the controller 110 transmits the configuration information to the server 106, the server 106 can utilize a database of manufacturers and match it with the manufacturer indicated by the configuration information to determine the appropriate user interface to send to the electronic device 102. For example, the server 106 can determine the manufacturer using the EDID information.

[0029] In an embodiment, when the controller 110 transmits the configuration information to the server 106, the server 106 can utilize a database of geographic location information and match it with the geographic location indicated by the geographic location data in the configuration information to determine the appropriate user interface to send to the electronic device 102. In an embodiment, the database of geographic location information can comprise a list of cable, satellite, and digital TV providers which would correspond to the geographic location data. For example, for a first city, there may only be two companies which provide cable, satellite, and digital TV, while in a second city, there may be four companies which provide cable, satellite, and digital TV.

[0030] In some instances, more than one user interfaces may be available based on the configuration information. In such a case, the server 106 can transmit such information to the electronic device 102, and the electronic device 102 can query the user to determine which user interface is the most appropriate one.

[0031] For example, if there are three possible manufacturers or models of the peripheral device, then the electronic device 102 can ask the user to select which of the three peripheral devices is the correct one. The corresponding user interface for the peripheral device can then be transmitted by the server and received by the electronic device 102. Similarly if there are three possible cable, satellite, or digital TV providers available, then the electronic device can ask the user to select which of the three possible cable, satellite, or digital TV providers is the correct one. The corresponding user interface for the cable, satellite, or digital TV provider can then be transmitted by the server 106 and received by the electronic device 102. Thus, the controller 110 may obtain a user interface selected from a plurality of user interfaces based at least partly on the configuration information.

[0032] In block S306 the controller 110 determines if an updated user interface is available. In block S308, if updated user interface is not found, then in block S310, the electronic device 102 can utilize the current user interface, such as one which is stored in the memory 112. Alternatively, in block S308, if there is an updated user interface, then in block S312, the electronic device 102 can download and install the latest user interface from the server 106. In an embodiment, an updated user interface need not be a completely new or different user interface. Instead an updated user interface may comprise partially overlapping features as the current user interface. In block S314, the controller 110 can auto configure the electronic device 102 based on the existing user interface or the latest user interface from the server 106.

[0033] In an embodiment, one or more steps performed in the block S302 or other blocks depicted in an embodiment in FIG. 3, is shown in an embodiment in FIG. 4. In block S402, the controller 110 determines identification data for the peripheral device 104. For example, if the peripheral device 104 comprises a display, the controller 110 determines identification data by checking the connected display's EDID information using the peripheral device connection unit 114. In an embodiment, the EDID information can be obtained through an HDMI connection. However, in an embodiment, the identification data can also be obtained through a network connection, such as by using the network connection unit 116.

[0034] In block S404, the controller 110 determines geographic location data of the electronic device 102. In an embodiment, the controller 110 determines the geographic location data of the electronic device 102 based on the IP address associated with the electronic device 102 or a public IP address of a gateway/router on the local network where

the electronic device 102 is located. For example, the controller can provide an associated IP address to a geo-location service (e.g., reachable by the Internet) and obtain the geographic location of the electronic device 102 (e.g., city, zip code, region, etc.).

[0035] In block S406, the controller 110 can provide a confirmation option for the user to confirm the configuration information. That is, the user can confirm whether one or more of the configuration information is correct. If it is not, the user can manually configure the configuration information.

[0036] For example, the user may be asked to confirm that the manufacturer or model of the peripheral device 104 is correct. Similarly, the user may be asked to confirm if the geographic location data is correct. That is, the geographic location data may indicate that the electronic device 102 is in one city but the electronic device 102 is actually in another city. This may occur if the user is near a boundary of two cities.

[0037] If the configuration information is not correct, the user may be able to manually select which of the configuration information should be utilized. For example, the user may be able to select a manufacturer or model of the peripheral device 104 from a list of possible peripheral devices. Similarly, the user may be able to manually select which city or geographic location the electronic device 102 is in.

[0038] In an embodiment, the controller 110 can be configured to revise the configuration information based on user input from a remote control. In an embodiment, the remote control can be configured to wirelessly connect to the electronic device 102 or portions of the electronic device 102. In an embodiment, the remote control can be part of the electronic device 102, even if the remote control wirelessly connects to the electronic device 102 or portions of the electronic device 102.

[0039] In an embodiment, a process for configuring the electronic device 102 is shown in an embodiment in FIG. 5. In block S502, the controller 110 determines configuration information. For example, the controller 110 determines the identification data for the peripheral device 104 and/or the geographic location data for the electronic device 102.

[0040] In block S504, the controller 110 determines the user interface corresponding to the configuration information. For example, instead of having the database be located on the server 106, the database may be located in the electronic device 102. In an embodiment, the database may be located in the memory 112. Furthermore, in an embodiment, a plurality of user interfaces may be stored in the memory 112. In such a case, the electronic device 102

can determine the user interface corresponding to the configuration information by accessing the memory 112 and obtaining the user interface from the plurality of user interfaces stored in the memory 112 based at least partly on the configuration information. In an embodiment, if there are more than one user interfaces available, the controller 110 can query the user to select the appropriate configuration information to determine which user interface to utilize. In block S506, the controller 110 can configure the electronic device 102 using the user interface corresponding to the configuration information.

[0041] Those of ordinary skill would appreciate that the various illustrative logical blocks, modules, and algorithm parts described in connection with the examples disclosed herein may be implemented as electronic hardware, computer software, or combinations of both. Furthermore, the embodiments can also be embodied on a non-transitory machine readable medium causing a processor or computer to perform or execute certain functions.

[0042] To clearly illustrate this interchangeability of hardware and software, various illustrative components, blocks, modules, circuits, and process parts have been described above generally in terms of their functionality. Whether such functionality is implemented as hardware or software depends upon the particular application and design constraints imposed on the overall system. Skilled artisans may implement the described functionality in varying ways for each particular application, but such implementation decisions should not be interpreted as causing a departure from the scope of the disclosed apparatus and methods.

[0043] The parts of a method or algorithm described in connection with the examples disclosed herein may be embodied directly in hardware, in a software module executed by a processor, or in a combination of the two. The parts of the method or algorithm may also be performed in an alternate order from those provided in the examples. A software module may reside in RAM memory, flash memory, ROM memory, EPROM memory, EEPROM memory, registers, hard disk, a removable disk, an optical disk, or any other form of storage medium known in the art. An exemplary storage medium is coupled to the processor such that the processor can read information from, and write information to, the storage medium. In the alternative, the storage medium may be integral to the processor. The processor and the storage medium may reside in an Application Specific Integrated Circuit (ASIC).

[0044] The previous description of the disclosed examples is provided to enable any person of ordinary skill in the art to make or use the disclosed methods and apparatus. Various modifications to these examples will be readily apparent to those skilled in the art,

and the principles defined herein may be applied to other examples without departing from the spirit or scope of the disclosed method and apparatus. The described embodiments are to be considered in all respects only as illustrative and not restrictive and the scope of the disclosure is, therefore, indicated by the appended claims rather than by the foregoing description. All changes which come within the meaning and range of equivalency of the claims are to be embraced within their scope.

CLAIMS

What is claimed is:

1. An electronic device comprising:
 - a peripheral device connection unit configured to connect to a display interface of a peripheral device and to receive identification data for the peripheral device; and
 - a controller configured to:
 - determine configuration information, wherein the configuration information is based at least on one of the identification data for the peripheral device or geographic location data for the electronic device;
 - obtain a user interface selected from a plurality of user interfaces based at least partly on the configuration information; and
 - automatically configure the electronic device based on the obtained user interface.
2. The electronic device of claim 1 wherein the user interface further comprises at least application information for the electronic device.
3. The electronic device of claim 2 wherein the application information further comprises at least an order of applications to be displayed on the user interface.
4. The electronic device of claim 1 wherein the identification data comprises manufacturer information and model information for the peripheral device.
5. The electronic device of claim 1 wherein the geographic location data is determined based at least partly on an Internet Protocol ("IP") address.
6. The electronic device of claim 5 wherein the IP address comprises a public IP address associated with the electronic device.
7. The electronic device of claim 1 further comprising a network connection unit configured to connect to a server, and wherein the controller is configured to obtain the user interface by:
 - transmitting configuration information to the server; and

receiving the user interface selected from the plurality of user interfaces based at least partly on the configuration information from the server.

8. The electronic device of claim 1 further comprising a memory configured to store the plurality of user interfaces, and wherein the controller is configured to obtain the user interface by:

accessing the memory to obtain the user interface from the plurality of user interfaces stored in the memory based at least partly on the configuration information.

9. The electronic device of claim 1 wherein the controller is further configured to: revise the configuration information based on user input from a remote control.

10. The electronic device of claim 1 wherein the controller is further configured to: determine if an updated user interface is available; and automatically configure the electronic device based on the updated user interface when the updated user interface is available.

11. The electronic device of claim 1 wherein the peripheral device comprises a television.

12. A method for configuring an electronic device comprising: determining configuration information using a controller in the electronic device, wherein the configuration information is based at least on one of identification data for a peripheral device connected to the electronic device or geographic location data for the electronic device;

obtaining a user interface selected from a plurality of user interfaces based at least partly on the configuration information using the controller in the electronic device; and

automatically configuring the electronic device based on the obtained user interface using the controller in the electronic device.

13. The method of claim 12 wherein the user interface further comprises at least application information for the electronic device.

14. The method of claim 13 wherein the application information further comprises at least an order of applications to be displayed on the user interface.
15. The method of claim 12 wherein the identification data comprises manufacturer information and model information for the peripheral device.
16. The method of claim 12 wherein the geographic location data is determined based at least partly on an Internet Protocol ("IP") address.
17. The method of claim 16 wherein the IP address comprises a public IP address associated with the electronic device.
18. The method of claim 12 wherein the obtaining a user interface selected from a plurality of user interfaces based at least partly on the configuration information further comprises:
- transmitting configuration information to a server; and
 - receiving the user interface selected from the plurality of user interfaces based at least partly on the configuration information from the server.
19. The method of claim 12 wherein the obtaining a user interface selected from a plurality of user interfaces based at least partly on the configuration information further comprises:
- accessing a memory in the electronic device storing a plurality of user interfaces to obtain the user interface selected from the plurality of user interfaces based at least partly on the configuration information.
20. The method of claim 12 further comprising:
- revising the configuration information based on user input from a remote control.
21. The method of claim 12 further comprising:
- determining if an updated user interface is available; and

automatically configuring the electronic device based on the updated user interface when the updated user interface is available.

22. An electronic device comprising:
- a network connection unit configured to connect to a peripheral device and to receive identification data for the peripheral device; and
 - a controller configured to:
 - determine configuration information, wherein the configuration information is based at least on one of the identification data for the peripheral device or geographic location data for the electronic device;
 - obtaining a user interface selected from a plurality of user interfaces based at least partly on the configuration information; and
 - automatically configure the electronic device based on the obtained user interface.
23. The electronic device of claim 22 wherein the user interface further comprises at least application information for the electronic device.
24. The electronic device of claim 23 wherein the application information further comprises at least an order of applications to be displayed on the user interface.

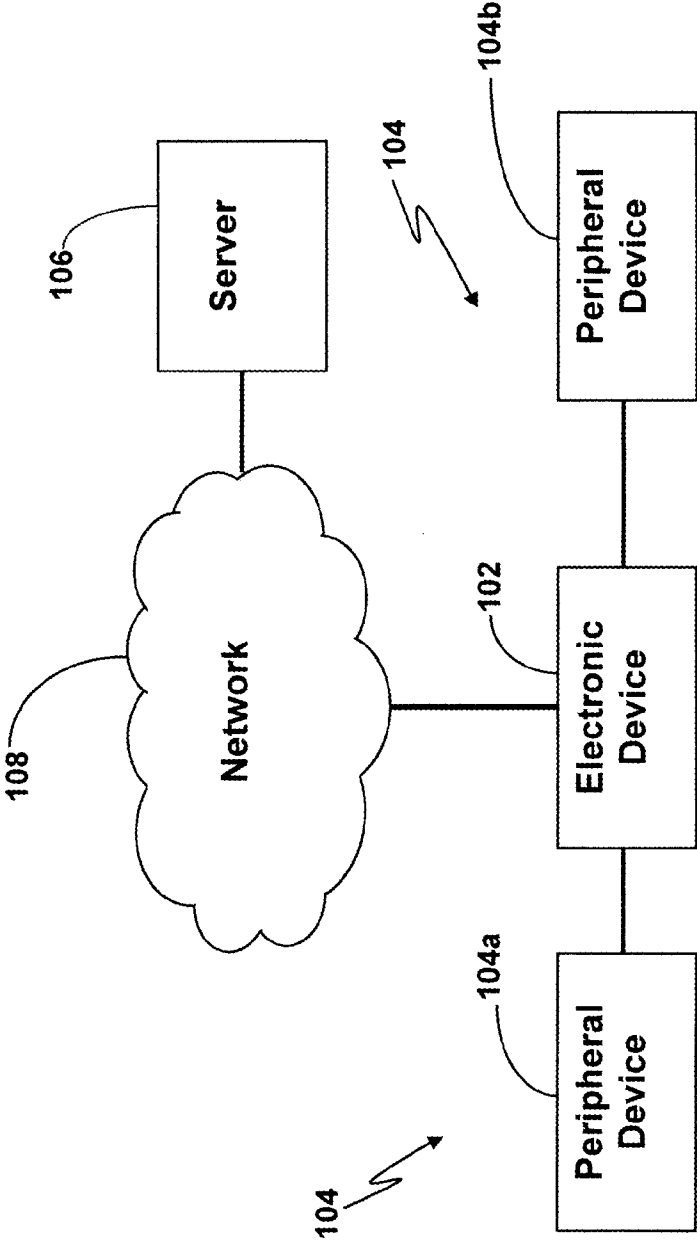


FIG. 1

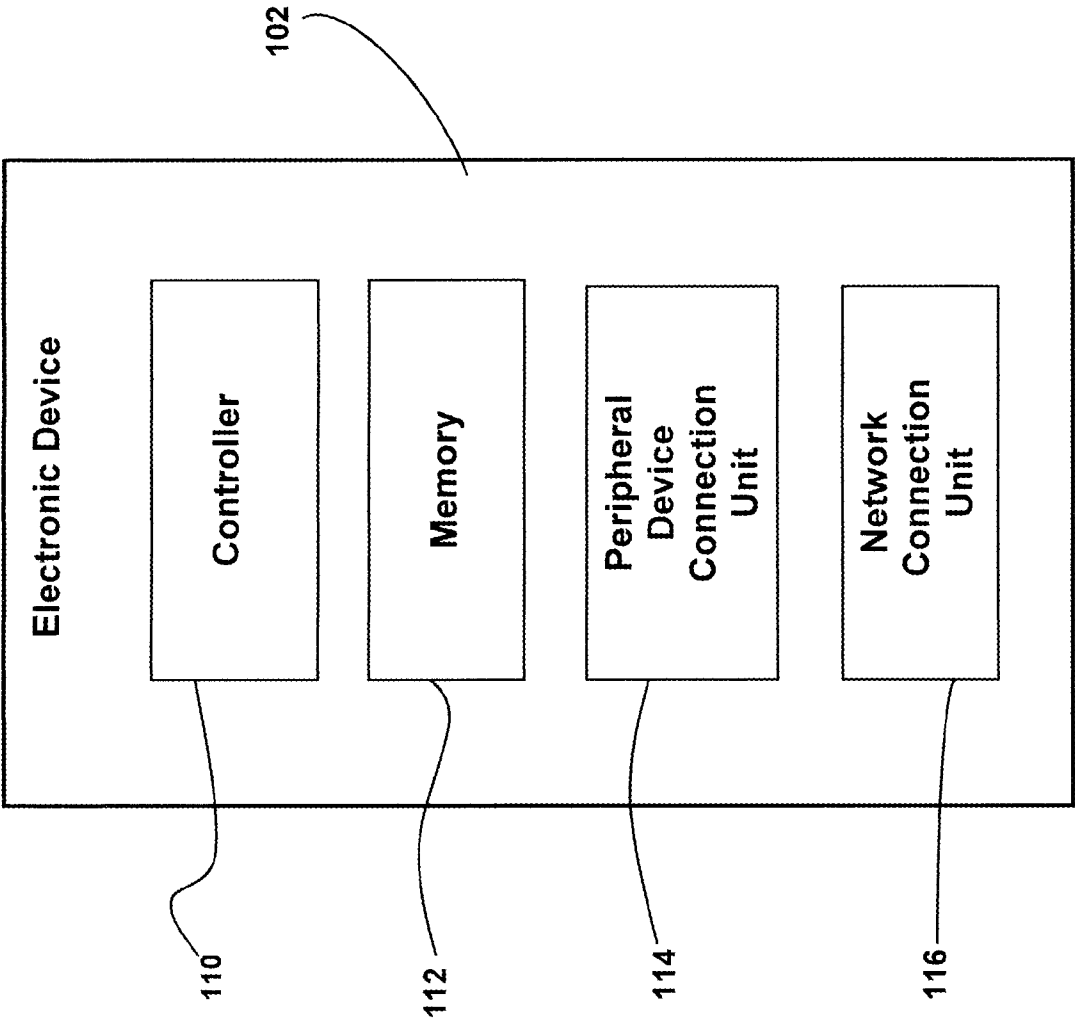


FIG. 2

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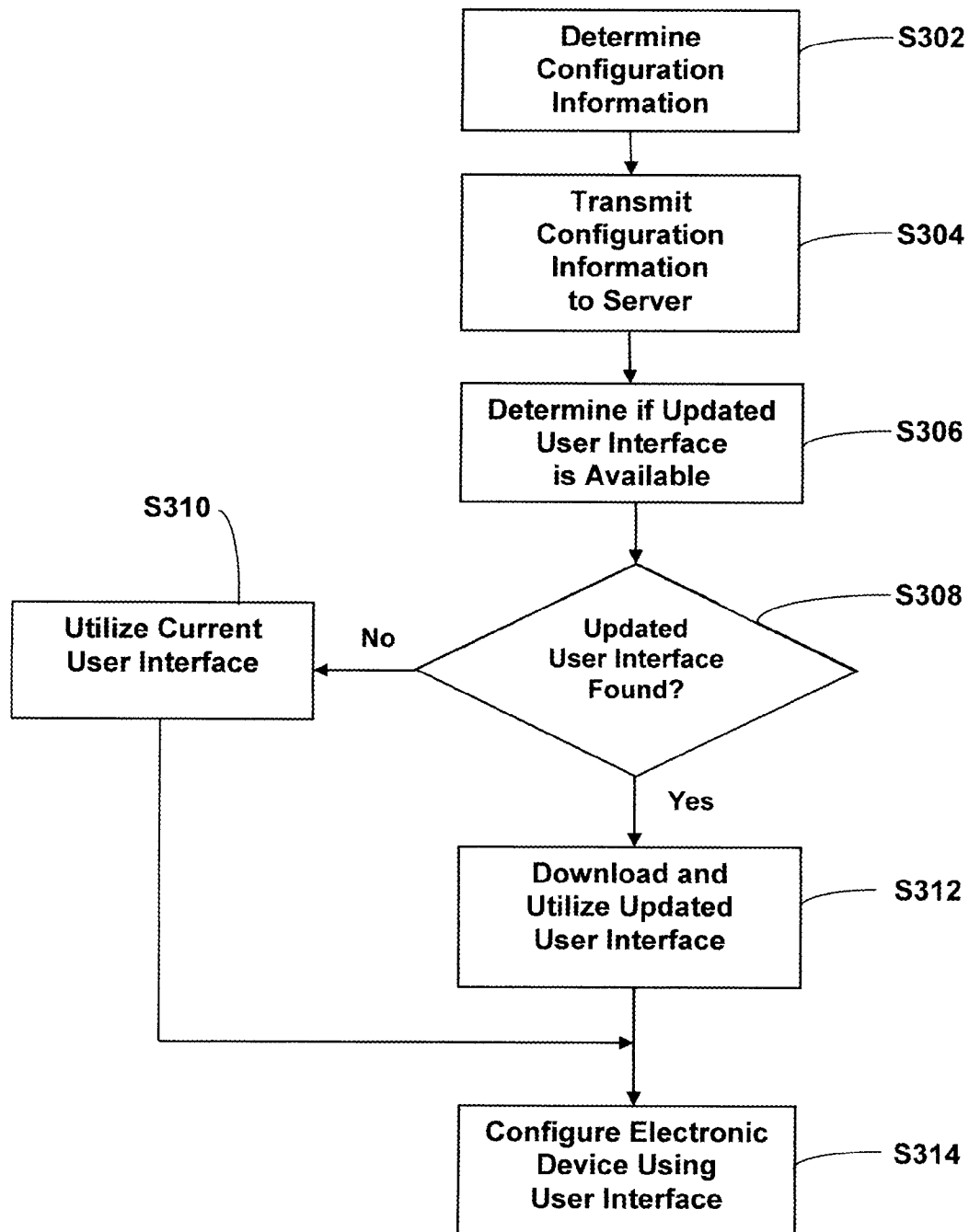
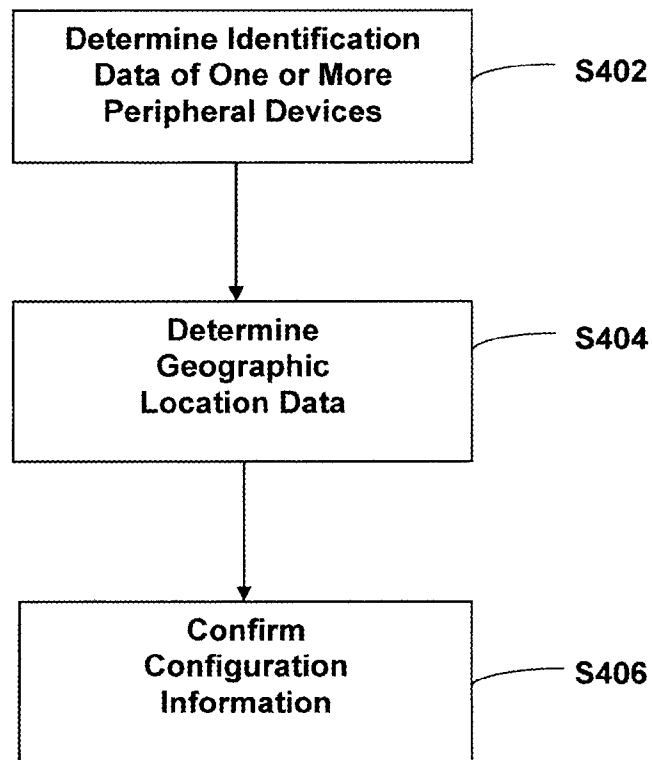
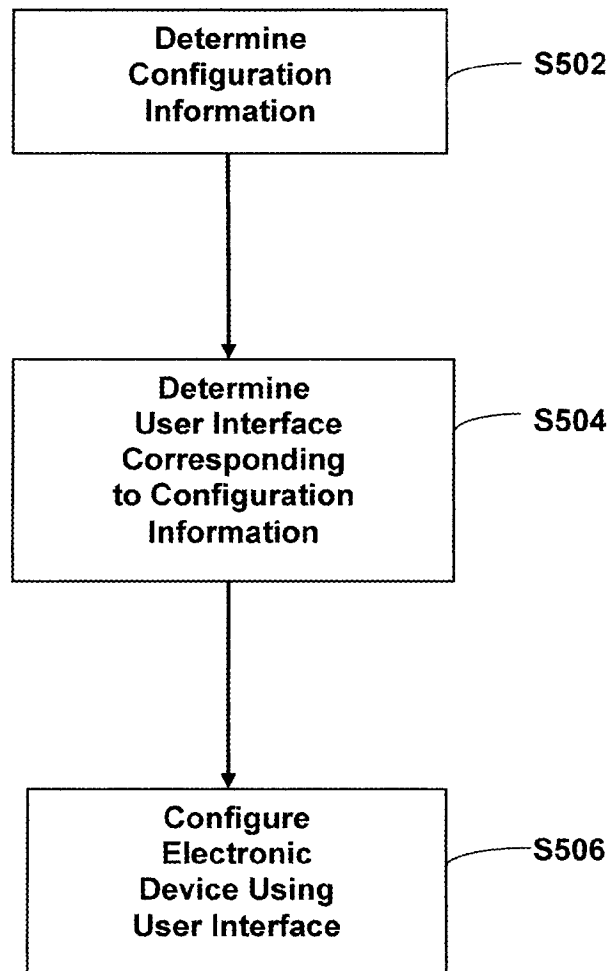


FIG. 3

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**FIG. 4**

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**FIG. 5**

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2014/059976**A. CLASSIFICATION OF SUBJECT MATTER****H04N 21/4402(2011.01)i, H04N 21/45(2011.01)i**

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

H04N 21/4402; H04N 21/00; G06F 3/00; H04N 3/27; H04L 9/32; G06F 15/177; H04L 12/28; H04L 12/56; H04N 21/45

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: peripheral device, peripheral device connector, peripheral device identification, electronic device geographic location, configuration information, user interface**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2012-0173767 A1 (DU-SEOK KIM et al.) 05 July 2012 See paragraphs 6, 20-39; and figs. 1-4.	12-15, 18, 19, 21
Y		1-4, 7, 8, 10, 11, 22-24
A		5, 6, 9, 16, 17, 20
Y	US 2009-0251605 A1 (CHIH-HAO HSIAO) 08 October 2009 See paragraphs 4, 5, 18-23; and figs. 3, 4.	1-4, 7, 8, 10, 11, 22-24
A	US 2013-0160050 A1 (JOSEPH F. HALGAS, JR.) 20 June 2013 See paragraphs 14-24; and figs. 2, 3.	1-24
A	US 2013-0061297 A1 (BRIAN LARSEN et al.) 07 March 2013 See paragraphs 23-38, 52-63; and figs. 1, 4-6.	1-24
A	US 2010-0039958 A1 (ZETIAN GE et al.) 18 February 2010 See paragraphs 33-69; and figs. 2, 3.	1-24

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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"&" document member of the same patent family

Date of the actual completion of the international search

14 January 2015 (14.01.2015)

Date of mailing of the international search report

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Information on patent family members

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